REMARKS

Claims 1-14 were rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.   The claims are therefore now amended to make them definite. No new matter is introduced.

Claims 1-14 were also rejected under 35 USC 102(e) as being anticipated by *Molnar* (U.S. Pat. No. 6,567,481 B1). Applicant respectfully submits that the present response overcomes this reference. The present independent claims are claims 1, 5, 13, and 14 and Applicant respectfully requests reconsideration and allowance of these claims, in addition to the claims depending therefrom.

Summary of the Present Invention

The present invention relates to performing channel equalization in a receiver (see abstract). According to the present method, the signal is first received and then communication is estimated by the channel estimator (0018). The signal contains symbols formed of binary information by phase shift keying. The method further comprises taking samples of the received signal at intervals (0017). To find out the transmitted symbols, the bit decisions are computed on the basis of the quantity of the samples, and after each decision step it is examined whether the decision step is to be iterated, wherein upon iteration of the decision step, at least some of the bit decisions of the previous decision step are used in addition to the samples under examination, in the computation of the bit decision (0010). So if the state of the channel equalizer is stabilized, there is no need for additional iteration round whereas if it is noticed that the state is not sufficiently stable, a new round of iteration is performed (0030).

The Present Claimed Invention is not Anticipated by *Molnar*

The Examiner considers *Molnar* (US Patent No. 6,567,481) to be a novelty bar. According to *Molnar*, DQPSK modulation is used, whereas in the present MPSK modulation is used (col. 4, lines 35-42), and therefore the two inventions operate very differently. According

to *Molnar*, data is transmitted over a radio communications channel wherein the data is transmitted as a plurality of sequential symbols, wherein each sequential symbol is determined as a function of a previous symbol and a respective differential symbol corresponding to a portion of the data being transmitted (col. 3, lines 8-15). Bit probability calculations are then performed on the improved estimates of the differential symbols (co. 3, lines 24-28).

In *Molnar*, a <u>differential</u> PSK is used, and there is dependence between the two following symbols, a(n) – b*a(n-1). This feature of *Molnar* is used when demodulating the symbols from the received signal. The estimated likelihoods are then used to estimate the partial probabilities. The symbol decision is based on these estimated probabilities.

In the present invention, however, <u>ordinary</u> MPSK (no differential) modulation is used. This has important consequences for how the present invention operates. The dependence between symbols comes from the transmission channel. The cost function used is related to a likelihood function. In the present invention, the partial derivatives of the cost function are taken with respect to bits b, and a gradient descent can be used to iteratively solve the values for bits. It is not necessary to check all the partial probabilities, but instead the iteration gives the value directly.

The Applicant submits that the last part of claim 1 (i.e. *"examining whether said decision step is to be iterated ..."*) is new and inventive as well. In *Molnar's* invention, when calculating symbols, the symbols depend on each other and the symbols are determined directly by performing iteration rounds, whereas in the present invention the symbols are not dealt with directly but rather, it is bits that are dealt with. Figs. 2a and 2b of the present application illustrate very well how bit decisions of the previous step are used when calculating the bit decisions, as presently claimed. In *Molnar's* patent, however, Fig. 9 does not disclose this fact, nor is this fact disclosed in the cited portions of *Molnar's* columns 8 or 9.

All of these novel features of present claim 1 are correspondingly included in the other independent claims 5, 13, and 14. Those other claims should therefore be allowable for the same reasons.
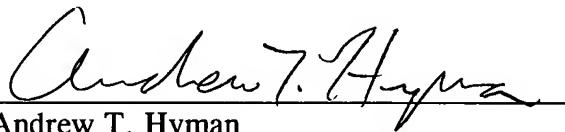
CONCLUSION

Therefore, Applicants submit that the present invention distinguishes over *Molnar* (U.S. 6,567,481). The objections and rejections of the Official Action of March 29, 2005, having been obviated by amendment or shown to be inapplicable, withdrawal thereof is requested, and passage of claims 1-14 is earnestly solicited.

Respectfully submitted,

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